

IN THE CLAIMS:

Please cancel Claims 1-6, 24, 25 and 29-33 without prejudice to or disclaimer of the subject matter presented therein.

Please amend Claims 7, 8, 10, 13, 14, and 19-22 as follows.

1. - 6. (Cancelled)

7. (Currently Amended) An image display apparatus comprising:

reflective display means;

illumination means for illuminating the display means;

an illumination optical system for guiding light from the illumination means to the display means;

a display optical system for guiding light from the display means to an observation position;

a first optical member used in common by said illumination optical system and said display optical system and having an optical surface (A) functioning as a reflecting surface in association with said illumination optical system and as a transmission surface in association with said display optical system; and

a second optical member;

wherein light from said illumination means is reflected by said optical surface (A) and is guided to said display means;

wherein light from said display means is transmitted through said optical surface (A) and then is transmitted through said second optical member to be guided to the observation position,

wherein, when a reference ray is defined as a ray which is illumination light from said illumination means that is reflected at the center of said display means and emerges

therefrom and is incident on the center of a pupil, and a plane that includes incident light and exit light of the reference ray in each surface is defined as a local meridional section in each surface, the following condition is satisfied,

$$0.1 < \text{local.fyA} / \text{local.fy} < 1.0,$$

where local.fy is a focal length of said display optical system in the local meridional section and local.fyA is a focal length of said optical surface (A), and

wherein said display optical system includes a plurality of reflecting surfaces in said second optical member.

8. (Currently Amended) The image display apparatus according to Claim 7, wherein the optical surface (A) having the two functions of transmission and reflection, shared between the illumination optical system and the display optical system, comprises only one surface.

9. (Original) The image display apparatus according to Claim 7, wherein the plurality of reflective surfaces in the display optical system are decentered curvature surfaces.

10. (Currently Amended) The image display apparatus according to Claim 7, wherein the display optical system is comprised of an optical member comprising the optical surface (A) and another optical member having an optical refracting power, said optical members being placed with an air space in between.

11. (Previously Presented) The image display apparatus according to Claim 7 wherein the illumination light source means is an RGB time division light source and the

display means displays images of R, G, and B in time division in synchronism with emission of color light beams of R, G, and B from the RGB time division light source.

12. (Original) The image display apparatus according to Claim 9, wherein the display optical system includes two or more surfaces with refracting powers differing depending upon azimuth angles, and the entire display optical system has a positive refracting power.

13. (Currently Amended) An image display apparatus comprising:  
reflective display means;  
illumination means for illuminating the display means;  
an illumination optical system for guiding light from the illumination means to the display means;  
a display optical system for guiding light from the display means to an observation position;  
a first optical member used in common by said illumination optical system and a display optical system and having ~~an~~ a first optical surface (A) functioning as a reflecting surface in association with said illumination optical system and as a transmission surface in association with said display optical system; and  
a second optical member,  
wherein from said illumination means is reflected by said first optical surface (A) and is guided to the display means;  
wherein light from said display means is transmitted through said optical surface (A) and then is transmitted through said second optical member to be guided to the observation position,

wherein said first optical member has ~~an~~ a second optical surface (B) opposed to said first optical surface (A) facing toward said display means so that light from said display means is transmitted through said first optical surface (A) and thereafter is transmitted through said second optical surface (B), said first optical surface (A) has a curvature and said second optical surface (B) is a curved surface,

wherein, when a reference ray is defined as a ray which is illumination light from said illumination means that is reflected at the center of said display means and emerges therefrom and is incident on the center of a pupil, and a plane that includes incident light and exit light of the reference ray in each surface is defined as a local meridional section in each surface, the following condition is satisfied,

$$0.4 < \text{local.ryA} / \text{local.ryB} < 2.0,$$

where local.ryA and local.ryB are radius of curvature of said first optical surface (A) and a radius of curvature of said second optical surface (B) in the local meridional section, respectively, and have the same sign, and

wherein said display optical system includes a plurality of reflecting surfaces in said second optical member.

14. (Currently Amended) The image display apparatus according to Claim 13, wherein the first optical surface (A) having the two functions of transmission and reflection, shared between the illumination optical system and the display optical system, comprises only one surface.

15. (Original) The image display apparatus according to Claim 13, wherein the reflected light from the display means emerge from the lens body and thereafter is reflected by a plurality of reflective surfaces being decentered curvature surfaces to be guided to the pupil.

16. (Previously Presented) The image display apparatus according to Claim 13, wherein said illumination means is a time division light source for emitting a plurality of color light beams in time division and the display means displays images based on respective color beams in time division in synchronism with emission of the color light beams from the time division light source.

17. (Previously Presented) The image display apparatus according to Claim 13, wherein the display optical system includes two or more surfaces with refracting powers differing depending upon azimuth angles, and the entire display optical system has a positive refracting power.

18. (Original) The image display apparatus according to Claim 13, wherein said lens body is comprised of a glass member.

19. (Currently Amended) The image display apparatus according to Claim 13, wherein said first optical surface (A) and said curved second optical surface (B) are cylindrical surfaces.

20. (Currently Amended) The image display apparatus according to Claim 13, wherein said first optical surface (A) is a half mirror of metal.

21. (Currently Amended) An image display apparatus comprising:  
reflective display means;  
illumination means for illuminating the display means;

an illumination optical system for guiding light from the illumination means to the display means;

a display optical system for guiding light from the display means to an observation position

a first optical member used in common by said illumination optical system and said display optical system and having ~~an~~ a first optical surface (A) functioning as a reflecting surface in association with said illumination optical system and as a transmission surface in association with said display optical system; and

a second optical member;

wherein illumination light from said illumination means is reflected by said first optical surface (A) and is guided to said display means;

wherein light from said display means is transmitted through said optical surface A and then is transmitted through said second optical member to be guided to the observation position,

wherein said first optical member has ~~an~~ a second optical surface (B) opposed to said optical surface A facing toward said display means so that light from said display means is transmitted through said first optical surface (A) and thereafter is transmitted through said second optical surface (B), said first optical surface (A) has a curvature and said second optical surface (B) is a curved surface,

wherein, when a reference ray is defined as a ray that is illumination light from said illumination means that is reflected at the center of said display means and emerges therefrom and is incident on the center of a pupil, and a plane that includes incident light and exit light of the reference ray in each surface is defined as a local meridional section in each surface, in the local meridional section of a display means surface, the optical path length of a ray, in said first optical member, that passes a most peripheral image on said display means at a far side from the observation position and a center of the pupil is longer

than the optical path length of a ray, in said first optical member, that passes a most peripheral image on said display means at a near side from the observation position and the center of the pupil, and,

wherein said display optical system includes a plurality of reflecting surfaces in said second optical member.

22. (Currently Amended) The image display apparatus according to Claim 21, wherein a curvature in the local meridional section of said first optical curvature surface (A) of said lens body in said display optical system is larger than a curvature in the local meridional section of said second optical curved surface (B).

23. (Original) The image display apparatus according to Claim 22, wherein optical path lengths in the lens body in the display optical system of eye center rays at respective image heights, passing the image heights and the center of the eye, on the local meridional section of said display means, become gradually longer from said F2 eye center ray side to said F3 eye center ray side

24. - 25. (Cancelled)

26. (Original) A head mounted display comprising the image display apparatus as set forth in Claim 11.

27. (Original) A head mounted display comprising the image display apparatus as set forth in Claim 16.

28. (Original) A head mounted display comprising the image display apparatus as set forth in Claim 17.

29. - 33. (Cancelled)